Sapna Suthar

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EDUCATION

MCMASTER UNIVERSITY, *Bachelor of Electrical Engineering – Class of 2027*   September 2023 – Present
Relevant Coursework: Logic Design, Data Structures & Algorithms, Microprocessor Systems, Principles of Programming, Circuit Analysis

ETHICAL HACKING ESSENTIALS (EHE)   August 2024 - Present
Learned ethical hacking, penetration testing, computer and network security

ALTIUM EDUCATION PCB BASIC DESIGN COURSE   May 2024 – July 2024
Created schematics, designed and routed a power regulator shield board to power a bank of LEDs and an Arduino Uno

HARVARD CS50 COURSE   July 2022 – August 2022
Developed problem solving skills and completed assignments in C, SQL, HTML, CSS and JavaScript

WORK EXPERIENCE AND PROJECTS

BCD TO 7 SEGMENT DISPLAY DECODER   September 2024 – Present
- Designed a BCD to 7-Segment Display Decoder using Verilog on Quartus, implementing K-map minimized logic
- Prototyped on a breadboard with ICs, thoroughly testing the circuit's functionality in a physical setup
- Conducted a functional simulation in Quartus to ensure accurate operation and reliability of the design
- Programmed onto Intel's MAX 10 FPGA, achieving responsive and real-time digital display control for practical application

MCMASTER FORMULA ELECTRIC TEAM   October 2024 - Present
Front Controller - Electrical Team Member
- Worked on creating a quarter sized fully electric car to compete at the FSAE Formula Electric competition
- Designed the Front Controller to maintain safe control of the tractive system, sensors, and battery management system
- Created the board schematic and PCB using Altium Designer and ran simulations using LTSpice
- Evaluated board specifications and requirements to ensure optimal electrical component selection
- Assembled and soldered components onto PCBs for testing and integration into the vehicle

MCMASTER FORMULA ELECTRIC TEAM   February 2024 – June 2024
High Voltage Battery Charger - Electrical Team Member
- Developed a charger to be able to charge the battery by plugging it into a standard wall socket
- Created the schematic and PCB in Altium Designer and used CAD to decide on PCB and enclosure size
- Worked with the Accumulator sub-team to design and develop the charger packaging and enclosure

FLAPPY BRAIN   July 2023- August 2023
Developer
- Designed and implemented a Flappy Bird style game that uses sensors that track brainwaves to control the game
- Conducted research on Brain-Computer Interfaces (BCI) and brainwave frequencies to inform project development
- Integrated the game with the brainwave sensors using Flask

SKILLS, ACTIVITIES AND INTERESTS

Coding Languages: Verilog, SystemVerilog, VHDL, C/C++, Python, Java, SQL, HTML, CSS, JavaScript, Flask
Software & Design Tools: Altium Designer, Quartus, MATLAB, Simulink, Git, VS Code, PSpice, LTSpice
Hardware & Technical Skills: FPGA Design, PCB Design, MS Office, CAD, Soldering
Activities: Scotiabank Unlock Your Future – Women in Technology Program (2023-2024), Women in STEM Ambassador (2023), Girls Who Code High School Co-President (2022-2023)